

5    **CLAIMS**

WHAT IS CLAIMED IS:

1. An isolated nucleic acid molecule comprising a polynucleotide having a nucleotide sequence at least 95% identical to a sequence selected from the group consisting of:
  - 10       (a) a polynucleotide fragment of SEQ ID NO:1 or a polynucleotide fragment of the cDNA sequence included in ATCC Deposit No: PTA-2966, which is hybridizable to SEQ ID NO:1;
  - (b) a polynucleotide encoding a polypeptide fragment of SEQ ID NO:2 or a polypeptide fragment encoded by the cDNA sequence included in ATCC Deposit No: 15       PTA-2966, which is hybridizable to SEQ ID NO:1;
  - (c) a polynucleotide encoding a polypeptide domain of SEQ ID NO:2 or a polypeptide domain encoded by the cDNA sequence included in ATCC Deposit No: PTA-2966, which is hybridizable to SEQ ID NO:1;
  - (d) a polynucleotide encoding a polypeptide epitope of SEQ ID NO:2 or a 20       polypeptide epitope encoded by the cDNA sequence included in ATCC Deposit No: PTA-2966, which is hybridizable to SEQ ID NO:1;
  - (e) a polynucleotide encoding a polypeptide of SEQ ID NO:2 or the cDNA sequence included in ATCC Deposit No: PTA-2966, which is hybridizable to SEQ ID NO:1, having biological activity;
  - 25       (f) a polynucleotide which is a variant of SEQ ID NO:1;
  - (g) a polynucleotide which is an allelic variant of SEQ ID NO:1;
  - (h) an isolated polynucleotide comprising nucleotides 57 to 1064 of SEQ ID NO:1, wherein said nucleotides encode a polypeptide of SEQ ID NO:2 minus the start codon;
  - 30       (i) an isolated polynucleotide comprising nucleotides 54 to 1064 of SEQ ID NO:1, wherein said nucleotides encode a polypeptide of SEQ ID NO:2 including the start codon;
  - (j) a polynucleotide which represents the complimentary sequence (antisense) of SEQ ID NO:1; and
  - 35       (k) a polynucleotide capable of hybridizing under stringent conditions to any one of the polynucleotides specified in (a)-(j), wherin said polynucleotide does not

5 hybridize under stringent conditions to a nucleic acid molecule having a nucleotide sequence of only A residues or of only T residues.

2. The isolated nucleic acid molecule of claim 1, wherein the polynucleotide fragment comprises a nucleotide sequence encoding a G-protein coupled receptor protein.

10 3. The isolated nucleic acid molecule of claim 1, wherein the polynucleotide fragment comprises a nucleotide sequence encoding the sequence identified as SEQ ID NO:2 or the polypeptide encoded by the cDNA sequence included in ATCC Deposit No: PTA-2966, which is hybridizable to SEQ ID NO:1.

4. The isolated nucleic acid molecule of claim 1, wherein the polynucleotide fragment comprises the entire nucleotide sequence of SEQ ID NO:1 or the cDNA sequence included in ATCC Deposit No: PTA-2966, which is hybridizable to SEQ ID NO:1.

15 5. The isolated nucleic acid molecule of claim 2, wherein the nucleotide sequence comprises sequential nucleotide deletions from either the C-terminus or the N-terminus.

20 6. The isolated nucleic acid molecule of claim 3, wherein the nucleotide sequence comprises sequential nucleotide deletions from either the C-terminus or the N-terminus.

25 7. A recombinant vector comprising the isolated nucleic acid molecule of claim 1.

8. A method of making a recombinant host cell comprising the isolated nucleic acid molecule of claim 1.

9. A recombinant host cell produced by the method of claim 8.

10. The recombinant host cell of claim 9 comprising vector sequences.

30 11. An isolated polypeptide comprising an amino acid sequence at least 95% identical to a sequence selected from the group consisting of:

(a) a polypeptide fragment of SEQ ID NO:2 or the encoded sequence included in ATCC Deposit No: PTA-2966;

(b) a polypeptide fragment of SEQ ID NO:2 or the encoded sequence included in ATCC Deposit No: PTA-2966, having biological activity;

5                   (c) a polypeptide domain of SEQ ID NO:2 or the encoded sequence included  
in ATCC Deposit No: PTA-2966;

                     (d) a polypeptide epitope of SEQ ID NO:2 or the encoded sequence included  
in ATCC Deposit No: PTA-2966;

                     (e) a full length protein of SEQ ID NO:2 or the encoded sequence included in  
10 ATCC Deposit No: PTA-2966;

                     (f) a variant of SEQ ID NO:2;

                     (g) an allelic variant of SEQ ID NO:2;

                     (h) a species homologue of SEQ ID NO:2;

                     (i) a polypeptide comprising amino acids 2 to 337 of SEQ ID NO:2, wherein  
15 said amino acids 2 to 330 comprise a polypeptide of SEQ ID NO:2 minus the start  
methionine;

                     (j) a polypeptide comprising amino acids 1 to 337 of SEQ ID NO:2; and

                     (k) a polypeptide encoded by the cDNA contained in ATCC Deposit No.  
PTA-2966.

20                 12. The isolated polypeptide of claim 11, wherein the full length protein  
comprises sequential amino acid deletions from either the C-terminus or the N-  
terminus.

                     13. An isolated antibody that binds specifically to the isolated polypeptide  
of claim 11.

25                 14. A recombinant host cell that expresses the isolated polypeptide of  
claim 11.

                     15. A method of making an isolated polypeptide comprising:  
                     (a) culturing the recombinant host cell of claim 14 under conditions such that  
said polypeptide is expressed; and

30                 (b) recovering said polypeptide.

                     16. The polypeptide produced by claim 15.

                     17. A method for preventing, treating, or ameliorating a medical condition,  
comprising administering to a mammalian subject a therapeutically effective amount  
of the polypeptide of claim 11 or the polynucleotide of claim 1.

35                 18. A method of diagnosing a pathological condition or a susceptibility to  
a pathological condition in a subject comprising:

5           (a) determining the presence or absence of a mutation in the polynucleotide of  
claim 1; and  
             (b) diagnosing a pathological condition or a susceptibility to a pathological  
condition based on the presence or absence of said mutation.

10          19. A method of diagnosing a pathological condition or a susceptibility to  
a pathological condition in a subject comprising:  
             (a) determining the presence or amount of expression of the polypeptide of  
claim 11 in a biological sample; and  
             (b) diagnosing a pathological condition or a susceptibility to a pathological  
condition based on the presence or amount of expression of the polypeptide.

15          20. A method for identifying a binding partner to the polypeptide of claim  
11 comprising:  
             (a) contacting the polypeptide of claim 11 with a binding partner; and  
             (b) determining whether the binding partner effects an activity of the  
polypeptide.

20          21. The gene corresponding to the cDNA sequence of SEQ ID NO:2.

22. A method of identifying an activity in a biological assay, wherein the  
method comprises:  
             (a) expressing SEQ ID NO:1 in a cell;  
             (b) isolating the supernatant;  
             (c) detecting an activity in a biological assay; and  
             (d) identifying the protein in the supernatant having the activity.

25          23. The product produced by the method of claim 20.

24. A process for making polynucleotide sequences encoding a gene  
product having altered G-protein coupled receptor activity comprising,  
             a) shuffling a nucleotide sequence of claim 1,  
             b) expressing the resulting shuffled nucleotide sequences and,  
             c) selecting for altered G-protein coupled receptor activity as  
                 compared to the G-protein coupled receptor activity of the gene  
                 product of said unmodified nucleotide sequence.

30          25. The process of claim 24, wherein the nucleotide sequence is SEQ ID  
NO:1.

5        26. A shuffled polynucleotide sequence produced from the process of  
claim 25.

27. An isolated nucleic acid molecule consisting of a polynucleotide  
having a nucleotide sequence selected from the group consisting of:  
   (a) a polynucleotide encoding a polypeptide of SEQ ID NO:2;  
10        (b) a polynucleotide comprising nucleotides 57 to 1064 of SEQ ID  
NO:1, wherein said nucleotides encode a polypeptide of SEQ ID NO:2 minus the start  
codon;  
   (c) a polynucleotide comprising nucleotides 54 to 1064 of SEQ ID  
NO:1, wherein said nucleotides encode a polypeptide of SEQ ID NO:2 including the  
15        start codon;  
   (d) a polynucleotide encoding the HGPRBMY11 polypeptide encoded  
by the cDNA clone contained in ATCC Deposit No. PTA-2966;  
   (e) a polynucleotide which represents the complimentary sequence  
(antisense) of SEQ ID NO:1;

20        28. The isolated nucleic acid molecule of claim 27, wherein the  
polynucleotide comprises a nucleotide sequence encoding a G-protein coupled  
receptor protein.

25        29. The isolated nucleic acid molecule of claim 27, wherein the  
polynucleotide fragment comprises a nucleotide sequence encoding the polypeptide  
sequence identified as SEQ ID NO:2.

30        30. The isolated nucleic acid molecule of claim 28, wherein the nucleotide  
sequence comprises sequential nucleotide deletions from either the C-terminus or the  
N-terminus.

35        31. A recombinant vector comprising the isolated nucleic acid molecule of  
claim 28.

32. A recombinant host cell comprising the recombinant vector of claim  
31.

33. An isolated polypeptide consisting of an amino acid sequence selected  
from the group consisting of:  
   (a) a polypeptide fragment of SEQ ID NO:2 having G-protein coupled  
receptor activity;

5           (b)     a polypeptide domain of SEQ ID NO:2 having G-protein coupled receptor activity;

             (c)     a full length protein of SEQ ID NO:2;

             (d)     a polypeptide corresponding to amino acids 2 to 337 of SEQ ID NO:2, wherein said amino acids 2 to 330 comprise a polypeptide of SEQ ID NO:2 minus the  
10 start methionine;

             (e)     a polypeptide corresponding to amino acids 1 to 337 of SEQ ID NO:2;

             (f)     a polypeptide encoded by the cDNA contained in ATCC Deposit No.

PTA-2966.

34.     A method of screening for candidate compounds capable of binding to  
15 and/or modulating activity of a G-protein coupled receptor, comprising:

a.) contacting a test compound with a substantially or partially purified polypeptide according to claim 28; and

b.) selecting as candidate compounds those test compounds that bind to and/or modulate activity of the polypeptide.

20       35.    The method according to claim 34, wherein the candidate compounds are small molecules.

36.     A cell comprising NFAT/CRE and the polypeptide of claim 11 or 33.

37.     A cell comprising NFAT G alpha 15 and the polypeptide of claim 11 or 33.

25       38.    A method of screening for candidate compounds capable of modulating activity of a G-protein coupled receptor-encoding polypeptide, comprising:

(a)     contacting a test compound with a cell or tissue expressing the polypeptide according to claim 11 or 33; and

30       (b)     selecting as candidate modulating compounds those test compounds that modulate activity of the G-protein coupled receptor polypeptide.

39.     The method according to claim 38, wherein the candidate compounds are agonists or antagonists of G-protein coupled receptor activity.

40.     The method according to claim 39, wherein the polypeptide activity is  
35     associated with the kidney.

5        41. A method of treating a disorder related to aberrant NF- $\kappa$ B activity comprising the step of administering an antagonist of the polypeptide provided in claims 11 or 33.

42. The method according to claim 41 wherein the disorder is a renal disorder.

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